DEPARTMENT OF HEALTH & HUMAN SERVICES Public Health Service

Centers for Disease Control
and Prevention (CDC)
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TB Notes
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Dear Colleague:

The Division of TB Elimination has continued to experience changes, some positive and some not. We were very saddened by the death of our friend and coworker, Bill Burley, who died on August 20 after battling leukemia for the past 2 years. The division has lost a valuable worker as well as a good friend who will be remembered and missed by all of us.

Our recent reorganization has resulted in Paul Poppe becoming the Associate Director for Management and Operations as well as the Principal Management Officer (PMO) and Carl Schieffelbein being designated Deputy Director, DTBE. Other changes include John Seggerson becoming the Acting Associate Director for External Relations, Dr. Pattie Simone assuming the responsibilities of Acting Chief of Field Services Branch (FSB), Mack Anders becoming Acting Deputy Chief of the branch, and Greg Andrews being selected as the Section Chief, Field Operations Section II, FSB.

The third national TB controllers' workshop, which was held here in Atlanta September 4-7, was attended by a record number of persons and was deemed by participants to be highly successful. It was good to see so many of you there. CDC's public health advisors met on Wednesday, September 4, for briefings and updates presented by staff of DTBE and of the National Center for HIV, STD, and TB Prevention (NCHSTP). The workshop, which began on Thursday and continued until noon on Saturday, included plenary sessions on surveillance issues, challenges in TB control, the impact of managed care on TB control, TB treatment updates, program evaluation, TB care in an era of limited resources, TB laboratories, coordination with federal facilities, and TB in foreign-born persons. There were two sessions for small-group discussions about the impact of managed care on TB control and TB care in an era of limited resources. There were further opportunities for information-sharing during lunchtime "brown bag sessions" on Thursday and Friday. I believe these workshops are valuable not only because they are a means of exchanging information, but also because they enable us to put names and faces together and meet our allies in the important work we do.

DTBE staff have attended several major conferences recently. The XIth International Conference on AIDS was held this year in Vancouver, Canada, from July 7-12. Several DTBE staff members attended the Interscience Conference on Antimicrobial Agents and Chemotherapeutics (ICAAC) and the meeting of the Infectious Diseases Society of America (IDSA) in September. Staff from DTBE made several presentations at the meeting of the International Union Against Tuberculosis and Lung Diseases. This meeting was held in Paris, France, October 3-5. Several issues relevant to TB

prevention and control in developing countries were discussed, such as the significance and impact of smear-negative cases and of HIV infection, especially in sub-Saharan African countries. A session about migration and TB was held on the last day of the conference. Dr. Helene Gayle, director of NCHSTP, moderated one of the sessions. Most recently, the Advisory Council for the Elimination of Tuberculosis (ACET) met in Atlanta October 9 and 10. We reviewed the proposed letter to DHHS Secretary Shalala and heard presentations on several topics, including TB vaccine development, INH hepatitis, interactions between rifamycins and protease inhibitors, and rifampin resistance. We ended with an overview of DTBE's Internet home page.

Two of the important research subjects we are currently looking at are the use of protease inhibitors in conjunction with rifampin to treat HIV-infected TB patients, and the use of rapid direct tests for TB. Protease inhibitors are used to treat HIV; they work by preventing the virus from replicating and appear to be very effective. However, rifampin accelerates the body's processing of protease inhibitors, necessitating an increased dosage of these costly HIV drugs. At the same time, protease inhibitors slow the body's handling of rifampin, leading to high levels of rifampin and the increased possibility of adverse side effects. Furthermore, interrupting the use of protease inhibitors can rapidly lead to resistance to these drugs. DTBE staff have completed an *MMWR* "Notice to Readers" on this topic.

The subject of rapid direct tests for TB has generated a great deal of interest among clinicians and public health staff. DTBE staff have received numerous inquiries regarding the uses and interpretation of these tests, and have prepared an MMWR "Notice to Readers" on this subject as well. In order to make these recommendations available as soon as possible to TB controllers and others who need the information, we are including summaries of both articles in this issue of *TB Notes*.

By January 1997, the Tuberculosis Information Management System (TIMS) will be the sole system for reporting new (1997) verified TB cases to CDC. It is important for all sites to be making preparations now for TIMS implementation, such as hiring and training appropriate staff, buying or upgrading software and hardware, and developing a plan to effect the transition from TBDS and SURVS-TB. We are currently conducting pre-release field testing of TIMS. The screens or windows have been posted on DTBE's home page on the Internet (http://www.cdc.gov/nchstp/tb/dtbe.html) to allow potential users to preview them and get a feel for the system. Many of you got a chance to see a demonstration of TIMS at the TB controllers' workshop. If you have any questions about TIMS, please contact Kate Hedstrom at (404) 639-8122; to discuss the implementation of TIMS in your specific area, please contact your program consultant.

Kenneth G. Castro, M.D.

In This Issue

NOTE: The use of trade names in this issue is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

HIGHLIGHTS FROM STATE AND LOCAL PROGRAMS

Cough It Up! A Videotape from Texas on Sputum Collection

The Texas Bureau of Laboratories of the Texas Department of Health (TDH) has released an instructional video entitled "Cough It Up!" to teach TB patients how to collect an acceptable sputum specimen for laboratory examination. The tape will be distributed nationwide, with copies going to each state health department laboratory and each state laboratory training coordinator, and to other sites on request. Local health departments and many Texas clinics and hospitals will receive the video as well.

Dr. Bruce Elliott, director of the Microbiological Services Division of the Bureau of Laboratories, saw a need to reduce the numbers of unsatisfactory specimens that were submitted to TDH for laboratory study. Specimens may be ruled unsatisfactory for many reasons, several of which are under the patient's control. Patients can avoid giving unsatisfactory specimens by rinsing the mouth before specimen collection, collecting sputum rather than saliva, completing the data on the submission form carefully, and getting the specimen to the lab promptly.

Supported by grants from the Tuberculosis Elimination Division of TDH and the Association of State and Territorial Public Health Laboratory Directors, Dr. Elliott collaborated on the format of the video with Dr. Jim Harris, training coordinator of the Bureau of Laboratories and Ted Candler, director of Video Productions of the Texas Rehabilitation Commission. In order to convey the instructions in an interesting, nonthreatening way that could be understood by the greatest number of patients, they decided to use a mime to demonstrate the procedure. The serious nature of the video is emphasized through introductory comments by Dr. Michael Kelley, chief of the Bureau of Communicable Disease Control. Verbal and closed-captioned instructions for the collection procedure were added. To reach many of the non-English speaking TB patients, Spanish and Vietnamese versions of the video, complete with introductory comments by native physicians, have also been produced.

—Reported by Phyllis Cruise
Texas Dept. of Health

New Jersey Adopts New Rules to Confine Persons with TB

On March 18, 1996, the New Jersey Department of Health (now the Department of Health and Senior Services) adopted new rules for the confinement of persons with TB. Two core principles guide the rules: (1) protect the public health from the spread of disease, and (2) treat persons having infectious, active, or clinically

active TB in the least restrictive environment possible. The major components of the new rules are:

- Develop a prescribed outpatient treatment plan that includes, at a minimum, DOT for the first 10 doses.
- Assign a case manager to each person with active or clinically suspected respiratory TB. The duties would include coordinating and monitoring the implementation of the person's treatment plan, providing educational services, and obtaining social services as needed.
- Detain individuals who have expressed refusal to comply, failed to comply, or are unable or unwilling to comply with required diagnostic examinations or prescribed treatment regimens (including ordered DOT).
- Provide the hearing process and due process.
- Delineate the roles of the health care provider, the case manager, the local health officer, and the Chief, TB Control Program.
- Develop a Request for Proposals for a facility to be designated as a commitment facility or commitment unit of a facility.

—Reported by Ken Shilkret
New Jersey Tuberculosis Control Program

Implementation of a DOT Database in New Jersey

Several clinics throughout New Jersey already have many patients on DOT. Many of these patients are kept on DOT for the duration of their therapy. Thus far, these clinics have been submitting monthly aggregate DOT data for various cohort groups. These data have provided a summary of adherence rates, the number of patients starting and the number completing DOT, and reason for discharge from DOT.

On March 18, 1996, New Jersey's Department of Health adopted new rules for the confinement of persons with TB. These rules require TB patients able to spread their germs to others to have, at a minimum, 10 doses of outpatient DOT. As a result of these new rules, it became evident that there was a need for an effective database to evaluate DOT efforts. Thus a DOT database was developed to evaluate the implementation of the new law as well as to allow more avenues for analysis.

It was determined that baseline data were needed to compare DOT before and after the new law was adopted. Therefore, the TB Control Program requested that data be submitted on a DOT Data Collection Form for each individual patient started on DOT from July 1, 1995, to the present. One objective was to eliminate the need for each agency to submit a new form for each patient each month. Once the form is initiated, each agency updates the original form monthly and forwards a copy to the program office. Therefore, only new information is updated monthly on the form. The data requested include variables such as medical supervisor, worker, TB status, DOT site, DOT frequency, date discharged from hospital, date DOT started, date 10 doses were completed (to satisfy the new rule mandate), number of days observed, number of days available, date stopped, reason stopped, month observed, and a section for comments. These are more specific than aggregate data.

Review of the DOT Data Collection Form identified several discrepancies in the way the various agencies were completing the form. It was obvious that there was a lack of understanding concerning the definition of DOT. For example, several agencies considered DOT to include a family member observing the ingestion of medicine, and there were inconsistencies in calculating DOT adherence rates. We have since addressed these and other issues by drafting detailed instructions for completing the form for all health care providers concerned.

To date, the implementation of this database has improved our quality control efforts in New Jersey. We intend to use this DOT database to evaluate and analyze DOT efforts in New Jersey by many different variables. It will provide a more uniform method of calculating adherence rates and will identify any potential problems with DOT definitions and practices. This database will allow analysis of the DOT program by county and city as well as by the variables listed above.

—Reported by Barry Spurr and Gus Aquino
New Jersey TB Control Program

DOT for the Treatment of TB in Alaska

Directly observed therapy (DOT) has become the standard of care for all patients with TB disease in Alaska. Over the past 2 years, most providers throughout the state have adopted DOT, both in the public and private health care sectors. In fact, providers have on several occasions requested DOT for extrapulmonary TB cases and also for isoniazid preventive therapy when they believe that adherence will be a problem.

Geographically, Alaska can be divided into three general areas—remote, rural, and urban. Remote Alaska includes vast parts of the state where villages of 100 to 800 persons are accessible only by small aircraft. The majority of individuals in this part of the state are Alaska Natives, which include Eskimo, Aleut, and American Indian peoples. There are no interconnecting roads, although during the winter months, motor vehicles and snowmobiles travel between villages along the frozen rivers. Subsistence hunting provides the main source of food and survival for people in remote Alaska. Community health aides, or CHAs, provide primary care in village clinics. CHAs receive brief and intense health care training through CHA training centers. They communicate daily with regional health center physicians to make diagnostic and treatment decisions, including whether the patient needs to be flown to a regional center for further care.

Rural Alaska can be as difficult to reach as remote Alaska, but much of the rural parts of the state are on the road system or the marine ferry system. Air travel is a prominent mode of transportation in rural Alaska also. The majority of people living in this part of the state are Caucasian. Towns range in size from several thousand people to several hundred; there are also many individuals and families scattered throughout large undeveloped tracts of land who live miles away from population centers. Farming, fishing, and logging are some of the major industries of rural Alaska.

Urban Alaska includes Anchorage, Fairbanks, and Juneau, the three largest cities, populations 258,000, 80,000, and 28,000, respectively. The Municipality of Anchorage has public health powers that are provided through its Department of Health and Human Services. Anchorage runs the only TB clinic in the state. The State of Alaska Division of Public Health provides public health services for Fairbanks and Juneau.

Public health nurses (PHNs) are the coordinators for DOT in all areas of Alaska. In some cases PHNs provide the DOT themselves, but in many other cases they direct DOT through DOT aides. In remote Alaska, DOT aides are often Community Health Aides. DOT aides have also been other responsible members of the community, such as teachers or elders in the village. DOT aides report nonadherent clients to the PHN and are often the first to note side effects from the TB drugs. All DOT aides keep a record of each medication dose on a calendar and submit the calendar for review to the PHN. The PHN submits a copy of the calendar to the Division of Public Health TB Program where it becomes a part of the record documenting patient adherence during the course of treatment. DOT aides receive a modest stipend for providing DOT. Both PHNs and DOT aides recommend incentives and enablers that may be helpful in ensuring client adherence; each region of the state has an incentive budget so that region-specific programs can be developed. The table below represents the past 6-year DOT experience of the Alaska TB Program:

DOT ADMINISTRATION

Yr	DOT (%)	Self (%)	DOT & Self (%)	Unk (%)	Tot
90	27 (40)	41 (60)	0	0	68
91	19 (27)	50 (71)	0	1 (1)	70
92	16 (28)	40 (70)	0	1 (2)	57
93	15 (26)	41 (72)	0	1 (2)	57
94*	37 (40)	16 (17)	5 (5)	34 (37)	92
95	63 (78)	1 (1)	5 (6)	5 (6)	81

* Data for this year are incomplete.

There was no formal program introducing DOT to state providers. In the fall of 1994, widespread TB outbreaks were discovered in seven villages in remote Alaska. In order to control these outbreaks, which occurred in extraordinarily isolated parts of the state, rigorous DOT programs were initiated for both TB cases and for individuals on preventive therapy. This model worked well for the unique village environment and became the model for both individual cases and for other village outbreaks reported in 1995 and 1996. The concept of DOT for all TB cases was further promoted by a state-wide TB conference in the spring of 1995; several nationally known TB experts were invited to present at this meeting and DOT was stressed in their presentations.

Throughout 1995 and continuing into 1996, the epidemiology and nursing sections within the State Division of Public Health have systematically interacted with all providers, encouraging them to provide DOT whenever a suspected or confirmed case of TB is found. The State of Alaska provides medications for all individuals undergoing treatment for active TB. This allows the Division of Public Health to identify suspected or confirmed TB cases early and to discuss DOT with each patient's health care provider. Because DOT is provided through the public health system at no cost to the client, and without additional resources required of the provider, DOT has been well accepted by almost all health care providers in Alaska.

—Reported by Elizabeth Funk, MD
Alaska TB Control Program

Symposium on Contact Investigation Held in New York City

On June 7 and 8, 1996, the New York City Bureau of Tuberculosis Control held a

symposium entitled "Investigation of Contacts to Tuberculosis Cases." As more TB programs achieve high rates of treatment completion, contact investigation and preventive therapy are becoming higher priorities. In planning this conference, Bureau staff hoped to stimulate discussion on issues related to contact investigations and bring forth practical solutions to everyday problems.

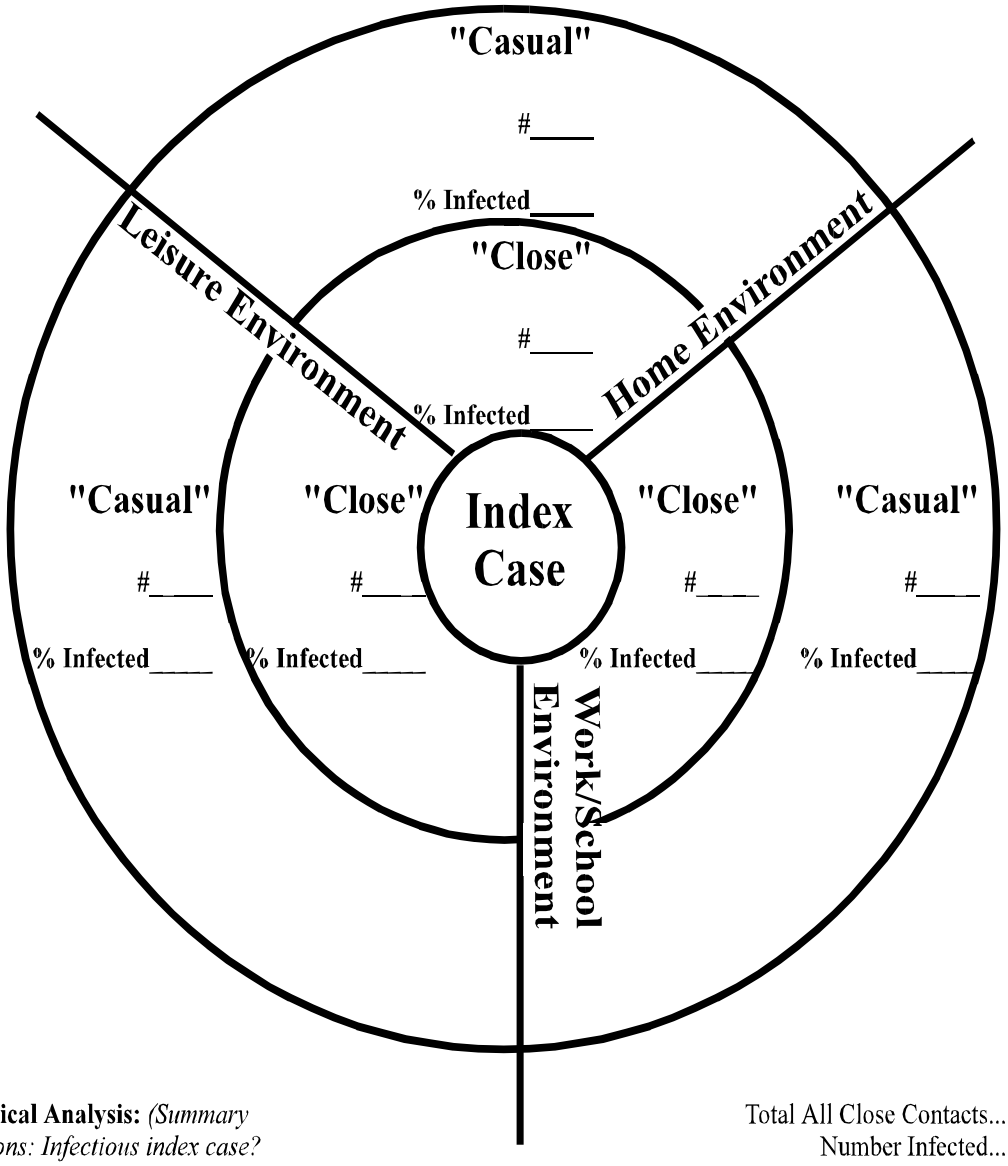
More than 180 participants from 22 states and five countries attended the symposium. The first day was devoted to presentations and a panel discussion. Presenters discussed the aims of contact investigation in high- and low-prevalence countries; lessons from restriction fragment length polymorphism (RFLP) analysis; contact investigation in New York City; experiences with contact investigation in Minnesota, Mississippi, Spain, and Brazil; lessons from sexually transmitted disease (STD) partner notification and the social network approach; and the effect of BCG vaccination on interpreting contact investigation results.

On the second day, participants were divided into workgroups to examine one of four topics: research questions for contact investigation, ways to do contact investigation in special populations or settings, criteria for expanding TB testing among anergic or BCG-vaccinated contacts, and ways to evaluate contact investigation.

Among the many issues examined during the symposium, some key points were made by presenters and participants at the meeting:

- The concentric circle approach to contact investigation, in which the closest contacts are tested first and screening is expanded if there is evidence of transmission in this group, is valuable and saves resources.
- Close contacts are not just household contacts; they can also be work, school, and leisure contacts. Conversely, not all household contacts are necessarily close contacts (see Concentric Circle Analysis on the next page).
- Contact investigations should be done promptly, especially among HIV-infected contacts.
- Contact investigation is a lower priority than achieving a high rate of treatment completion, and it should be done only in situations when preventive therapy can be offered to infected contacts.
- Standard definitions are needed for certain terms, such as smear-positive and close contact.
- TB programs need to improve their ability to elicit contacts. This may require asking patients creative questions such as "Who are the six most important people in your life?"
- Many private physicians are reluctant to prescribe preventive therapy; TB programs need to educate these physicians about its importance.
- Many individuals at risk for TB are also at risk for other diseases and problems, such as STDs, HIV infection, and drug or alcohol abuse. TB programs should consider focusing on communities and multiple problems, integrating their efforts with STD, HIV, and other public health programs.
- BCG vaccine given in infancy may be negligible as a cause of false-positive reactions, but given after the age of 1 can

Concentric Circle Analysis



Epidemiological Analysis: *(Summary and conclusions: Infectious index case? Contact broken when? Contact management recommendations)*

Total All Close Contacts.....____
Number Infected.....____
Number Not Infected.....____
Percent Infected.....____%
Number Convertors (last 2 years).....____
Total All Casual Contacts.....____
Number Infected.....____
Number Not Infected.....____
Percent Infected.....____%
Number Convertors (last 2 years).....____
Total All Others Evaluated.....____
Percent Infected.....____%

Figure–Close contacts are not just household contacts; they can also be work, school, and leisure contacts. Conversely, not all household contacts are necessarily close contacts. Figure courtesy of the Mississippi State Dept. of Health

have a significant effect on tuberculin positivity and boosting.

- One option is to skin test BCG-vaccinated contacts only once, after the window period. These contacts may experience boosting if tested twice within a 3-month period, which may be interpreted as new infection.

- Further research is needed on the determinants of TB transmission.

A summary report of the symposium will be published in late 1996.

—Reported by Michelle McMacken
New York City Bureau of TB Control

Use of Laptop Computers in the Field–Alabama

The State of Alabama TB Control Program has developed and is using a computerized system for the management of patients being treated for TB. Additional screens that will aid area managers and field workers in contact investigations are under development.

The laptop computer–based Windows system is designed to facilitate the documentation of each interaction between a public health outreach worker and a patient. Besides letting staff indicate who administered each dose of medication, the laptop computer permits the recording of drug toxicity and side effects (before, during, and after therapy) and procedures done in the field and/or in the clinic (e.g., vital signs, PPD, sputum or blood collected, vision testing). A complete medical record, including all medications and previous reactions to TB drugs, can be stored in the computer for quick reference. Information on travel to the patient site, a photograph of the patient, and comments on how the patient prefers to be given medication can also be stored and retrieved easily.

Two separate but interactive computer components were designed. The **system administration component** is housed at each public health area office in a central local area network (LAN) server and essentially provides a public health area–wide network for all outreach activities. The central LAN server, which is updated nightly, contains all clinical information on patients within a public health area and allows the TB program manager to track all patients within his or her area, change medicine doses, and schedule outreach workers to see the patients. Information from this system can be sent electronically to the state database and all reporting on TB control activities can be done electronically. The **outreach component** is located on laptop computers (Notebooks) that are used by field staff to collect and store all outreach activities. The laptop computers allow the public health field staff to electronically document the specifics of a patient encounter. The laptop computers interact with the central LAN server, and the information from the laptops is electronically transmitted to the server, thus integrating all patient information within a single system.

The program for the system was written in Microsoft Visual Basic, an industry standard for the development of graphical user interfaces. It uses Microsoft Access as the database, a widely used tool for desktop database development of workgroup data. The system is installed and maintained on generally accepted business computer systems and uses communication software that meets industry standards to transport data. The system is designed to organize the outreach activities and the TB patient data of the TB control field staff

performing outreach activities, to be easy for outreach workers and others with minimal computer experience to use effectively, and to be compatible with the Tuberculosis Information Management System (TIMS).

We believe that this system will allow our program to more closely monitor patients with TB infection and disease and more readily identify problems with therapy.

—Reported by Frank Bruce
Alabama Division of TB Control

Houston Initiative to Provide DOPT to School Children

The Houston Department of Health and Human Services TB Control Program (Houston TB Program) collaborates with independent school districts (ISDs) in Houston/Harris County to provide DOPT to students through school nurses in order to increase the number of children with significant tuberculin reactions who are placed on preventive treatment and who complete an adequate course of treatment. This project began in 1994 as a pilot project in 30 schools located in one school district. During July 1995 through June 1996, the DOPT School Project was expanded to include 20 of the 22 ISDs in Houston/Harris County. The 20 ISDs include 637 schools with 624,616 students.

While the Houston TB Program does not support routine tuberculin testing of low-risk groups in which few new infections are found, Houston/Harris County has a high incidence of TB and a need to enhance the completion of therapy for children in the area. The majority of the children in the area public schools are at risk for TB disease by virtue of having been born in a foreign country, belonging to a minority group with a high incidence of TB, or being a contact of a known TB case. The Houston TB Program staff realized that they had a "captive audience" in the schools and collaborated with the school districts to increase supervised treatment to students. The school districts were willing to assist by identifying positive reactors in this group (accomplished by requiring TB testing of all new entrants into public school), ensuring the positive reactors are placed on preventive therapy, then directly supervising the DOPT for those students placed on preventive therapy. This strategy has been effective in increasing the number of children who are placed on preventive therapy and who complete a minimum of 6 continuous months of treatment. A total of 777 students were placed on DOPT through this project during July 1995 through June 1996. The preventive treatment completion rate is 86.4% for this group of students, which is a significant improvement over the 64.1% preventive treatment completion rate for the overall TB program.

The DOPT School Project involves a joint effort of clinic staff, school personnel, private providers, and Houston TB Program staff. Through coordinated efforts with the Houston TB Program DOT staff, DOPT medical orders are obtained from each patient's health care provider. DOT field staff are assigned as partners to school nurses and deliver the student's TB field record and DOPT dose packets to the school when therapy is initiated. The field staff then deliver the additional DOPT dose packets for each student to designated school personnel each month. To encourage adherence and completion of treatment regimens, DOT field staff consider and use incentives and enablers when indicated. The school nurses give the DOPT twice a week, supervising the doses for each child and completing a TB program–approved toxicity screening form each time a dose is supervised. The DOT field staff provide backup in the event

DOPT must be given at home due to prolonged illness, extended holidays, or withdrawal from school. For short school holidays, three doses are given on Monday, Wednesday, and Friday the week before and on Monday, Wednesday, and Friday the week after the holiday. When there is a 2-week holiday, the DOPT is skipped during that time and the treatment period is extended 2 weeks. During summer vacation, students are put on self-administered therapy. Letters are distributed by the school nurses to the students in April, asking that the students be taken to a clinic in May and be given self-administered medications, which are not to be started until school is out.

Implementing such a program requires close monitoring. The DOT field staff have overall responsibility for the program, and there is a daily accounting of their activities to ascertain that documents and medications are delivered on schedule. The field staff and the school nurses work closely together, keeping in regular contact regarding the disposition of each student's treatment. Problems encountered have included insufficient funding to hire adequate numbers of DOT field staff and, relatedly, insufficient time for DOT field staff activities. However, the program has been successful in its goal of improving the completion of preventive therapy in children, and we believe the program could be successfully implemented in other areas of the country.

—Reported by the TB Control Program Staff
Houston Dept. of Health and Human Services

Drug Resistance–Oklahoma

In January 1995, Jon Tillinghast, MD, Oklahoma TB Controller, established a log to ensure that drug susceptibility results are received on the organisms of all culture-confirmed cases. A patient's name is entered in the log when the report of the first positive culture is received.

Name	County	First (+) Culture	Suscept.

Drug susceptibility results are recorded upon receipt; periodic review of the log allows investigation to obtain missing results. Using the log led to drug susceptibility results being received in 99% of culture confirmed cases in calendar year (CY) 1995 (contaminated cultures prevented drug susceptibility testing in 1%), compared with 93% in 1994 and 84% in 1993. Reviewing this log along with patient records allows drug therapy regimens to be compared with drug susceptibility results as they are received. In CY 1996 the maintenance of this log helped confirm a suspected increase in drug-resistant organisms. The drug resistance rate in Oklahoma between 1990 and 1995 remained below 4% for isoniazid.

To date in 1996, 10/102 cases have shown resistance to at least one drug, and 9 of the 10 organisms have shown resistance to isoniazid. As a result of this finding, all Oklahoma cases are being started on a four-drug regimen whereas in the recent past, such a regimen has been reserved for patients identified as being at increased risk for drug resistance. No epidemiologic link between any of the 10 cases has been identified.

—Reported by Jon Tillinghast, MD
Oklahoma TB Control Office

New *TB Program Managers Course*

On June 17-22, 1996, DTBE conducted the pilot course of the ***TB Program Managers Course*** developed for TB controllers, program managers, public health advisors, and nurse consultants with programmatic responsibilities at the state, city, and regional (within a state) levels. Course participants who had 6 months' to 3 years' experience in a TB program management position were selected for the first class of this new course. The pilot course had 30 participants and six CDC observers (including two program consultants from the newly created NCHSTP Program Coordination Unit). Of these 30 participants, 17 were state or territory employees, seven were CDC field staff, four were city employees, and two were county employees. By occupational category, the group included 15 administrators (this includes public health advisors), six nurses, and five physicians.

The development of this new course took place over the 1995–1996 fiscal year. A training needs assessment was first conducted in October and November using focus groups and interviews with 29 participants from the course's target audience. In December a training advisory group representing all DTBE branches was convened to help develop the course agenda and select subject matter experts to serve as content experts and faculty members. The session development teams included 63 people (35 DTBE headquarters, 14 field staff, 13 state and local health department, and three others) who were invited to provide input on initial outlines of the material to be presented.

Faculty for the pilot course included 16 presenters and 11 facilitators. Of these 27 faculty members, 23 were DTBE headquarters staff, three were field staff, and one was a state TB program employee. The following is a list of the sessions included in the new *TB Program Managers Course*:

- TB Prevention and Control Programs in the United States
- Essential Components of a TB Program and Role of the TB Program Manager
- Active Case Surveillance
- Using Epidemiology to Identify High-Risk Groups
- Effective Treatment Completion Strategies
- Appropriate Regimens and Using Drug-Resistance Data
- Infection Control and Health Department TB Clinics
- Investigation of Possible Transmission
- Effective Screening and Preventive Therapy Programs
- Recent Developments
- Reaching High-Risk Populations
- Program Evaluation and Performance Indicators
- Setting Priorities and Planning Strategies
- Quality Assurance and Case Monitoring
- Coordinating Efforts through Training and Education
- Forging Partnerships
- Charge to Participants

Preliminary evaluation results, based on overall course evaluation forms completed by 27 participants and three observers, are as follows:

- 100% said that the course met their expectations
- 100% felt that other program staff with management responsibilities would benefit from it
- 69% felt that all material was adequately covered; 31% felt that some material needed better or more in-depth coverage
- 67% rated the overall quality of the course as

excellent; 33% rated it as very good

The sessions judged to be the most helpful overall were "Active Case Surveillance," "Program Evaluation and Performance Indicators," and "Quality Assurance and Case Monitoring." Of seven participants who had attended *TB Today!* (DTBE's former course for TB program managers and others), 86% felt the overall value of the course had improved and 14% felt it had improved somewhat; 100% felt the course's relevance to their current job responsibilities had improved. Revision of individual course sessions is ongoing, based on the results of evaluation by both participants and faculty; further input from both CDC and state or local staff will also be incorporated.

—Reported by Susan M. Graham, MPH
Division of TB Elimination

"*Tuberculosis 2000*" Satellite Course Airs in January

TUBERCULOSIS 2000: Fundamentals of Clinical Tuberculosis and Tuberculosis Control is a three-part live, interactive satellite course for medical professionals. These sessions will be broadcast on January 23 and 30 and February 6, 1997 (Eastern time: 1:00 - 3:00 pm; Central time: 12:00 - 2:00 pm; Mountain time: 11:00 am - 1:00 pm; and Pacific time: 10:00 am - 12:00 pm). The latest information about tuberculosis will be presented by leading TB physicians:

Diagnosis of Tuberculosis *Philip C. Hopewell, M.D.*
Treatment of Tuberculosis *Michael D. Iseman, M.D.*
HIV and Tuberculosis *Jeff Glassroth, M.D.*
Screening for Tuberculosis *Gisela Schecter, M.D., M.P.H.*
Prevention of Tuberculosis *Charles L. Daley, M.D.*
Pediatric Tuberculosis *Jeffrey Starke, M.D.*
Public Health Measures Against Tuberculosis *Paula I. Fujiwara, M.D., M.P.H.*
Institutional Control Measures Against Tuberculosis *Henry Chambers, M.D.*
Personal Respiratory Protection Against Tuberculosis *Kevin P. Fennelly, M.D.*
Health Care Policy and Tuberculosis Control *Lee B. Reichman, M.D., M.P.H.*

TUBERCULOSIS 2000 will be broadcast to hundreds of satellite downlink sites throughout the United States. Participants register free of charge with their local site coordinator for all or any part of the course. During the broadcast, viewers will have the opportunity to call or fax in their questions to an expert panel appearing live in the San Francisco studio. CME and CE credits and a course syllabus will be available to participants who register through the coordinator at their viewing site.

If you are interested in receiving the broadcast at your site, or if you would like to find out about the broadcast site nearest you, contact the Francis J. Curry National Tuberculosis Center TB 2000 office at telephone number (415) 502-7904 or fax number (415) 502-7561, or by e-mail at tb2000@nationaltbcenter.edu.

TUBERCULOSIS 2000 is a joint project of the Francis J. Curry National Tuberculosis Center, the Charles P. Felton National Tuberculosis Center at Harlem Hospital, and the New Jersey Medical School National Tuberculosis Center. Funding for this project is provided by CDC.

—Reported by Leeza Stoller
Francis J. Curry National TB Center

TB Case Management for Nurses Course Held in NJ and Chicago

The New Jersey Medical School National Tuberculosis Center presented its first *Tuberculosis Case Management for Nurses* course on June 3-4, 1996, to 25 nurses working in TB control. The course was developed by the Center with an outside consultant, Dr. Minnie Campbell, who is professor of nursing at Kean College, and with Karen Galanowsky, RN, MPH, the prior nurse manager at the Center's Lattimore Clinic and now with the New Jersey Department of Health. Forty-eight nurses working in chest clinics throughout the state were sent an invitation letter including course and registration information.

The overall objective of the course was to provide both a review of the nature of public health nursing practice as well as specific knowledge regarding the process of TB case management and the nurse's role as a case manager. The class started out by reviewing public health nursing concepts and competencies, then moved on to an overview of nursing case management and case management for TB. On the second day, case studies were used to simulate real life situations and provide an opportunity for discussion and problem solving. On day 1, participants met from 8 am - 4:30 pm; on day 2 they met from 8:30 am - 1 pm.

The program evaluations were extremely favorable, with Dr. Campbell being rated an excellent, informative, and stimulating speaker. Participants were provided nursing credits from the New Jersey State Nurses Association.

Jerry Lama, RN, Clinical Coordinator, Chicago Department of Public Health, saw the course advertised in the Center's education and training calendar and began considering how to provide this training to a number of his nursing staff. Through discussions with Debbie Bottinick, the Center's program director for education and training, it was arranged that the course would be held in Chicago on June 18-19, for a staff of 54 nurses. The various responsibilities and financial obligations for each of the parties were outlined and, with the facilitator's consent, dates and times were chosen to offer the program at the American Lung Association's office in Chicago. The facilitator spoke with Jerry prior to the course to determine the specific educational needs for the Chicago audience. With that information in mind, and using the program evaluations from the New Jersey course, modifications were made to the course offered in Chicago. Participants attending that course also rated it very highly.

The New Jersey Medical School National Tuberculosis Center is expecting to co-sponsor this course with other state and city TB control programs in 1997. If you are interested in holding this course for an audience of 25 or more nurses who work primarily in TB control, contact Debbie Bottinick at (201)982-4811 to discuss how this may be arranged.

—Reported by Debbie Bottinick, MPH
NJ Medical School National Tuberculosis Center

RESEARCH UPDATE
The Use of HIV Protease Inhibitors with Rifampin

In 1995 and 1996, the U.S. Food and Drug Administration (FDA) approved three new drugs, saquinavir (Invirase™), ritonavir (Norvir™), and indinavir (Crixivan™), for patients with human immunodeficiency virus (HIV) infection. Another drug in this class of agents, nelfinavir (Viracept™), is expected to be available soon from the manufacturers through an expanded access

program. These drugs, which inhibit HIV protease and thus interfere with viral maturation and replication, are the most potent antiretroviral agents yet available.[1] However, these protease inhibitors interact with rifamycin derivatives, such as rifampin and rifabutin, which are used for the treatment and prevention of the mycobacterial infections commonly seen in HIV-infected patients. Rifamycins accelerate the metabolism of protease inhibitors (through the induction of hepatic P450 enzymes), resulting in subtherapeutic levels of the inhibitors. In turn, protease inhibitors retard the metabolism of rifamycins, leading to increased serum levels of the rifamycins drugs and the likelihood of increased drug toxicity.[2]

Members of the medical community involved in TB control and in the care of patients with TB and HIV infection are very concerned about the described interactions between protease inhibitors and rifampin, because they believe that clinicians learning about these interactions may decrease or restrict the use of rifampin in the treatment of TB patients coinfected with HIV. Rifampin is an essential element of the currently recommended regimen for treating TB.[3] This regimen, consisting of isoniazid and rifampin for 6 months, plus pyrazinamide and either ethambutol or streptomycin for the first 2 months, has been shown to be efficacious in HIV-infected patients.[4,5] Prompt and appropriate drug therapy for patients with HIV infection who acquire TB is critical, because TB has a severe impact on the progression of HIV infection[6] and because it is important to minimize the transmission of TB from infectious patients to members of the community.

At present, taking rifampin and protease inhibitors at the same time is not recommended by the manufacturers of the protease inhibitors in their product labeling. Interrupting the administration of a protease inhibitor has the potential for inducing resistance to that drug and possibly to other agents in the protease inhibitor class of drugs, and also has a potential detrimental effect on a patient's clinical status. Non–rifampin-containing anti-TB regimens are not recommended because, compared to rifampin-containing regimens, they are associated with increased treatment failure and mortality; slower bacteriologic responses; longer duration of therapy; and a more marked adverse impact of active TB on the progression of HIV infection.[7,8,9,10] Because of the common association of TB and HIV infection, it is expected that there will be increasing numbers of HIV-infected patients who are candidates for both protease inhibitor and rifampin therapy. This article reviews some approaches for managing such patients and lists the concerns and questions raised on the same issue. The information in this article is also being published as a "Notice to Readers" in the October 25, 1996, *MMWR*. This management is complex, frequently requires an individualized approach, and should be undertaken only after consultation with an expert.

There are three options for managing HIV-infected patients who are being considered for or are undergoing protease inhibitor therapy when TB is diagnosed (please see box on next page for a summary of these approaches). One option is to delay the start of or discontinue the protease inhibitor while giving a TB treatment regimen that includes rifampin. Some clinicians may prefer not to discontinue protease inhibitor therapy for the duration of TB treatment. This is because interruptions in the administration of protease inhibitors can induce HIV resistance to the protease inhibitor and possibly to other drugs within the protease inhibitor class, and because discontinuation of protease inhibitor therapy may

Management of HIV/TB patients who are not on protease inhibitor therapy

For HIV-infected patients diagnosed with TB for whom PI therapy is being considered but has not yet been initiated: **Administer a complete regimen of short-course, 4-drug TB treatment containing rifampin before initiating PI therapy**

Issues:

(1) Shown to be efficacious for curing TB in HIV-infected patients
(2) Antiretroviral agents other than PI may be administered concurrently
(3) Should be administered following current ATS/CDC guidelines, and the duration of therapy prolonged in patients with suboptimal responses
(4) Start of PI therapy delayed a minimum of 6 months

Management options for HIV/TB patients who are on protease inhibitor therapy

OPTION I. For HIV-infected patients diagnosed with TB while already undergoing PI therapy: **Discontinue the administration of the PI and administer a complete regimen of short-course 4-drug TB treatment containing rifampin. When complete (usually in 6 months), restart PI therapy**

Issues:

(1) Shown to be efficacious for curing TB in HIV-infected patients
(2) Antiretroviral agents other than PI may be administered concurrently
(3) Should be administered following current ATS/CDC guidelines, and the duration of therapy prolonged in patients with suboptimal responses
(4) Complete interruption of PI therapy for a minimum of 6 months

OPTION II. For HIV-infected patients diagnosed with TB while already undergoing PI therapy *and for whom, in the judgment of the treating clinician, the interruption of the PI drug must be kept to a minimum*: **Discontinue the administration of the PI and administer a 4-drug TB treatment regimen containing rifampin for a minimum* of 2 months. At this point, switch to a 16-month continuation-phase regimen consisting of isoniazid (15 mg/kg) and ethambutol (50 mg/kg) two times per week and restart PI therapy**

Issues:

(1) Expected to be efficacious for curing TB in HIV-infected patients
(2) Permits reintroduction of PI therapy after a 2-3 month delay
(3) Extends the duration of TB treatment to at least 18 months
(4) Must be modified if resistance to isoniazid or rifampin is present

***Until a bacteriologic response is achieved (conversion to culture-negative status) and susceptibility test results are available, usually within 3 months.**

OPTION III. For any HIV-infected patients diagnosed with TB while already undergoing PI therapy: **Continue the PI therapy with indinavir and administer a daily four-drug, 9-month TB treatment containing rifabutin (150 mg/day) in place of rifampin**

Issues:

(1) Rifabutin has comparable anti-TB activity but less hepatic P450 enzyme-inducing effect than rifampin[11,12]
(2) Two clinical trials (one in HIV-infected pts) demonstrated efficacy of 6-mo anti-TB regimens with rifabutin[13,14]
(3) Pharmacokinetics studies suggest that the combination of rifabutin at 150 mg/day and indinavir may result in acceptable levels of both[15]

cause the patient's clinical status to worsen. In such cases, two additional options may be considered for anti-TB therapy in these patients. Because the risks and benefits of all these options are unknown, clinicians should make management decisions on a case-by-case basis to provide optimal patient care.

Neither option 2 nor option 3 has been studied in large clinical trials of HIV-infected patients or patients undergoing protease inhibitor therapy during TB treatment. For these reasons, if either of these options is selected, CDC recommends the following interim guidelines: (1) From the start of therapy, perform bacteriologic evaluations frequently to document sputum conversion to culture-negative status, and after culture conversion, to detect any possible treatment failures, (2) extend the duration of therapy to at least 18 months for option 2 or to 9 months for option 3, (3) use only indinavir with option 3, (4) carefully monitor for drug toxicity, (5) use DOT throughout, and (6) reevaluate periodically during the first 2 years after completion of therapy (including a bacteriologic assessment at 6 months) and instruct patients to promptly report symptoms compatible with relapse of TB disease. HIV-infected patients diagnosed with drug-resistant TB, or diagnosed clinically with TB but without culture and susceptibility-testing results, should be managed on a case-by-case basis in consultation with a TB expert.

In other issues related to rifamycins and HIV protease inhibitors, rifabutin (300 mg/day) is one of the recommended drugs for prophylaxis of *Mycobacterium avium* complex (MAC) disease in HIV-infected persons.[16] Rifabutin can be given at half the dose (150 mg) with the PI indinavir. Also, clarithromycin and azithromycin have been approved by the FDA for MAC prophylaxis and are expected to have minimal interaction with the PI.[17,18] The USPHS/IDSA working group will review MAC prophylaxis in November 1996.

To reduce the likelihood of drug interactions while providing optimal anti-TB care for HIV-infected persons, members of the medical community involved in the care of TB patients and those involved in HIV clinical care are encouraged to coordinate efforts to ensure the best possible outcome for these patients. In addition, all HIV-infected patients at risk for TB infection should be carefully evaluated and prescribed preventive therapy with isoniazid if indicated, regardless of the patient's status for being prescribed a protease inhibitor. The Research and Evaluation Branch, Division of TB Elimination, CDC, telephone (404) 639-8123, solicits reports from private practitioners or health department staff who manage HIV-infected patients undergoing protease inhibitor therapy when TB is diagnosed.

—Reported by Elsa Villarino, MD, MPH, and Rick O'Brien, MD
Division of TB Elimination

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Issues in the Use of New Rapid Direct Tests for TB

Several methods for directly detecting *Mycobacterium tuberculosis* complex by amplification of mycobacterial DNA or RNA, in clinical specimens such as sputum or bronchoalveolar lavage, have been developed in recent years. One of these nucleic acid amplification (NAA) tests was recently approved by the Food and Drug Administration (FDA) as the Gen-Probe® Amplified Mycobacterium Tuberculosis Direct Test, or MTD. It is now available in many laboratories. Another NAA test, the Roche Amplicor™ test, was considered by an FDA advisory committee early this year and was also recommended for approval. Other NAA tests are being used in some individual laboratories even if not commercially available.

The Research and Evaluation Branch of DTBE has received inquiries from providers and public health personnel about the use of NAA tests. Several questions have involved the appropriate response and follow-up to a positive NAA result when other tests such as sputum smear and chest radiographs are negative. Others concern the use of NAA tests in patients already receiving drugs active against *M. tuberculosis*. The following discussion will briefly summarize NAA tests that may be available now or in the near future for the direct diagnosis of TB, and address some of the questions that have been raised.

The common feature of this group of NAA tests is the capacity to detect *M. tuberculosis* directly in digested, decontaminated, centrifuged clinical specimens by making multiple copies of small amounts of mycobacterial DNA or RNA. The MTD test amplifies ribosomal RNA by a method called transcription-mediated amplification. The Amplicor test amplifies DNA using the

polymerase chain reaction (PCR) technique; several other tests used in individual laboratories also use PCR as their underlying methodology. Other NAA methods under development include ligase chain reaction and strand-displacement amplification.

The MTD is the first NAA test for TB to receive FDA approval and the first to have an FDA-approved label (package insert) listing indications. It is only approved for use on respiratory specimens from untreated patients, with smear showing acid-fast bacilli (AFB) and culture also in progress. The narrowness of the approved indications does not prevent laboratories from using the test in other ways (off-label use), but there is less information about test accuracy under other conditions, and laboratories are required to develop their own performance information.

In the clinical trials summarized in the label information, all smear-positive specimens from untreated patients with positive MTD results (147 total) either grew *M. tuberculosis* complex or came from patients who had positive cultures from another specimen. Culture was still needed for susceptibility results and other purposes such as strain identification. In the additional experience after these studies, occasional false-positive results have been reported from specimens containing nontuberculous mycobacteria. The test detected 95.5% of culture-positive specimens in the clinical trials. The negative predictive value was 86.3%: that is, if these results that were found under study conditions are representative of laboratories offering the test for general use, and if used in similar populations, about 14% of smear-positive, MTD-negative specimens would be expected to grow *M. tuberculosis* complex. False negative MTD results would most likely be attributable to substances in the specimen which inhibit the NAA test, or to low numbers of *M. tuberculosis*.

The MTD and other NAA tests under development can be performed in less than a day. The time elapsed between sending a specimen and receiving results may actually be up to several days depending on whether it is sent to a reference laboratory, how often the laboratory runs the test, and whether resources such as space and personnel are available. Controls must be included in each test run, and laboratories with a small volume may not find it feasible or cost-effective to perform NAA tests every day.

The expected results are not as well defined when NAA tests are used off-label in situations other than smear-positive respiratory specimens from untreated patients. In smear-negative sputum, NAA tests may rapidly detect many of the specimens that will prove to be culture-positive, but with a higher false-negative rate than has been seen with smear-positive specimens. Thus, in several studies, NAA tests have failed to detect anywhere from a few percent up to more than half of culture-positive specimens when AFB smear–negative respiratory specimens are tested. False positives may also be a problem because the positive predictive value of the test depends on the prevalence of the condition in the population under study; that is, even if only a small proportion of truly TB-negative specimens are falsely identified by NAA as positive, these will constitute a large proportion of total positive NAA tests if the test is used to screen a large number of specimens with a very low proportion of true TB-positives. In general, both positive and negative predictive values of NAA tests may vary with the relative prevalence of tuberculosis and other mycobacterial infections in the local population and with the characteristics of the

patient population selected for testing. Therefore, use of clinical judgment and of additional sources of information is extremely important for deciding what specimens should be sent for NAA testing and how the results should be interpreted.

Using NAA tests to detect *M. tuberculosis* in the specimens of patients being treated for TB would also represent off-label use for the MTD, and information on this subject is very limited. A few studies suggest that NAA tests often remain positive after cultures have converted to negative on therapy. The frequency and duration of this persistent positivity and its implications for assessment of infectiousness or of treatment failure have not been fully established.

Many of the questions regarding use of NAA tests for TB diagnosis were discussed at the April 1996 meeting of the Advisory Council for the Elimination of Tuberculosis. Based on this discussion, DTBE has been developing an MMWR Notice to Readers concerning the use of these tests and formulating a list of research priorities. DTBE is interested in receiving comments on how these tests are being used in TB control and clinical practice, including anecdotes describing situations in which they have been particularly useful or have been associated with problems. Suggestions of specific research needs in the areas of test performance and applications to clinical and public health decisions are welcome. What information on these tests would you find most useful, and why? Comments can be directed to Barbara Styrt in the Research and Evaluation Branch at (404)639-8123. Any serious problems with FDA-approved tests should also be reported to the FDA MedWatch program (1-800-FDA-1088).

—Reported by Barbara Styrt, MD
Division of TB Elimination

BEHAVIORAL SCIENCE NOTES

Improving Adherence to TB Treatment with Participatory Research and Problem Solving

A multidisciplinary team of clinicians, health educators, and anthropologists was funded by the organization Behavioral Research and Education Programs Targeting Communities of Color (BREPTCC) to create an educational intervention for health care providers that could lead to improved treatment adherence among urban African American TB patients with or at risk for HIV/AIDS. Our goals were to identify the key adherence issues that could be addressed by changing provider behavior, and then to create and evaluate a series of workshops using audiovisual materials, discussion, and role playing to achieve these changes.

Traditional anthropology methods—living among people (native informants) while watching them (participant observation)—have given way to more rapid techniques of assessment. One such method is *participatory research*, which brings the native informant and the outside observer together in a goal-oriented, problem-solving interaction to collect data.

Our participatory data-gathering consisted of having trained members of the Atlanta TB Prevention Coalition, who work in TB prevention and education, conduct focus group interviews with front-line clinical staff from three urban county TB programs and two urban HIV/AIDS programs. The process was multilayered: the anthropologist and health educator (outside observers) first interviewed core Coalition staff (native informants) about their work and their perceptions of barriers to adherence. This core group of providers then worked with the social scientists to develop the focus group interview

guide, and then conducted the focus groups with the TB and HIV/AIDS program staff (more native informants).

Data analysis consisted of a two-step process. First, we employed a thematic text analysis of the transcripts, seeking information and key words according to prearranged categories. This resulted in a series of thematic bundles, essentially problems and obstacles to patient adherence encountered by staff at different stages of the patient management process. The second step was a dramatic interpretation of the identified problems and obstacles through role-playing, using the core staff and an additional group of providers (more native informants) who had not been part of the focus groups.

The main finding of our research, stated simply, is that *TB management requires a series of interpersonal encounters, where communication skills are the key resource.* Our informants, the front line health care providers, indicate that *interpersonal engagement* is the key to patient adherence.

The role-playing provided the creative framework for identifying multiple issues regarding interpersonal engagement between provider and patient. They also put the information into a dramatic context that is interesting and relevant to the target audience (other health care providers), and that required only minor creative reinterpretation by scriptwriters, directors, and actors to produce audiovisual training materials. The resulting materials are not a series of explanations, but rather a series of illustrations of encounters that go wrong, which are followed by problem-solving sessions among participants to discuss and role-play more effective behaviors. In addition, the videos provide some models of effective communication skills for difficult patient-provider encounters, which can be discussed and emulated by participants during the workshops.

We are currently evaluating the effectiveness of this educational intervention by the use of preintervention and postintervention "standardized patient" interactions, whereby participants in the educational program are videotaped in an encounter with an actor playing a patient, and the presence of goal behaviors is measured before and after the training sessions.

—Reported by Naomi Bock, M.D., and Claudia Fishman, Ph.D.
Emory University School of Medicine and the Rollins School of Public Health

INTERNATIONAL NOTES

Update on Border Activities

Foreign-born persons continue to represent an increasing proportion of the annual U.S. TB morbidity (36% in 1995). Mexican-born persons are the largest group among these foreign-born persons with TB (nearly one quarter in 1995 or 8% of all TB cases in the United States). Little is known about the characteristics of these patients, particularly migration patterns, prior disease and treatment history, and health-care seeking behavior of these patients, all of which can affect TB control efforts.

From October 1, 1995, to January 5, 1996, the International Activity of DTBE conducted an epidemiologic study in collaboration with various health departments in Texas, New Mexico, Arizona, and California to gain more information on foreign-born Hispanic TB patients. The study was based in eight counties along the U.S. border with Mexico and involved extensive patient interviews conducted by bilingual staff as well as chart and lab record reviews. The study

focused on determining where in Mexico (or Central America) patients had originated, how long they had been in the United States at the time of diagnosis, how often they returned to Mexico, and why. The study also looked at available drug resistance data from these eight counties to compare differences in resistance levels among foreign-born Hispanic, U.S.-born Hispanic, and U.S.-born non-Hispanic patients.

A total of 169 patients were enrolled in the study, 94% of whom were Mexican-born. The median duration of time in the United States for the patients prior to diagnosis was nearly 15 years, with a range of 4 months to 81.5 years. Forty percent immigrated to the United States from nonborder communities in Mexico, which suggests that current cooperative efforts with Mexico aimed at TB control should be extended beyond border cities.

Nearly 75% of the patients had returned to Mexico at least once within the year prior to diagnosis (21% had returned at least weekly). Return visits to Mexico, where TB rates are higher, enhance the risk of acquiring infection. The primary reasons for returning to Mexico were to visit family and friends or to shop. Only 7% of patients had returned to seek health care.

In terms of drug susceptibility, drug resistance levels in the eight counties among foreign-born Hispanic patients were similar to those for U.S.-born Hispanic patients, but were 1.7 to 7.7 times higher than for U.S.-born non-Hispanic patients. Such resistance levels among the foreign-born Hispanic patients can be partly explained by the relatively high number of patients (20%) reporting treatment for TB in the past. The comparable resistance levels between the foreign-born and U.S.-born Hispanic patients reflect the close ties and the back-and-forth movement between communities on both sides of the border.

As an extension of this study, the individual participating states will also be looking at data from foreign-born Hispanic patients in nonborder communities to compare with the data from the border communities. This additional information should further enhance control efforts in the four States on the border with Mexico as well as cooperative binational efforts with Mexico.

—Reported by Charles Wells, MD
Division of TB Elimination

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PERSONNEL NOTES

Tracy Agerton, RN, MPH, is one of the new EIS Officers who joined DTBE on July 19. In 1987 she received a bachelor of science degree in biology from the Virginia Institute of Technology, then from 1989-1990 served in the U.S. Peace Corps in Ghana, West Africa. She worked in Florida as a laboratory technician from 1990-1991 and as a high school biology teacher in 1992; she also worked in the Hepatitis Branch of NCID, CDC, as an ASPH intern in 1992. In 1993 she earned a master of public health degree from the University of South Florida and a bachelor of science degree in nursing and an RN degree from New York University in 1994. Most recently Tracy worked as a nurse on the HIV Primary Care Project with the Albert Einstein College of Medicine in the Bronx, New York, from 1994-1996. She is assigned to the Epidemiology Section, SEB.

Greg Andrews has been selected as the chief in the Field Operations Section II, Field Services Branch, DTBE. Greg has a wide range of experience in TB including field assignments in New York City, Miami, and California. He has been a DTBE program consultant for the states, territories, and big cities of Region IX since 1990. He has earned an excellent reputation for his ability to establish productive working relationships with headquarters and field staff as well as TB controllers and managers. He is highly regarded for his responsiveness to TB controllers, managers, and field staff and for his skill in helping constituents improve program performance. In his new position as section chief, his experience, skills, and abilities will be very valuable assets to DTBE and State and local programs. His appointment was effective on September 15.

Gustavo Aquino has been selected for the vacant public health advisor position in the Puerto Rico TB program. Gus has been on assignment to the New Jersey TB program since May 1994. He

transferred from Trenton to San Juan on September 29.

Alan Bloch, MD, MPH, has accepted a new position as Deputy Chief of the Lead Poisoning Prevention Branch in the National Center for Environmental Health. He will supervise the scientific activities of the branch. He will start in his new position on December 1. Alan has devoted much of his professional career to TB prevention and control and has made important contributions in several areas including surveillance and, more recently, completion of adequate therapy. His competence and helpful, friendly demeanor will be missed both here and in the field.

Yvette M. Davis, VMD, MPH, received a bachelor of science degree from Cornell University; a doctorate in veterinary medicine from the University of Pennsylvania; and a master of public health degree from Johns Hopkins University. She completed the Epidemiology Fellowship program at the Food and Drug Administration (FDA), in the Center for Devices and Radiological Health, then entered the Epidemic Intelligence Service (EIS) program at CDC in 1992, followed by the Preventive Medicine Residency (PMR) program also at CDC. Dr. Davis was chief resident of CDC's PMR program before coming to DTBE as a medical epidemiologist in the Surveillance Section of SEB on July 1.

Beverly Devoe has been selected for the vacant public health advisor position in the Georgia TB program. Since November 1992, Beverly has been assigned by DTBE to the Fulton County Health Department through the Georgia Division of Public Health. She has had lead responsibility for coordinating TB program operations in Fulton and several other counties of Metropolitan Atlanta. In her new position, she will function as the senior public health advisor and manager of the Statewide TB program. Her appointment became effective October 13.

Heather Duncan has been selected for the vacant public health advisor position in the New York City TB program. Heather has been on assignment to the Outreach Unit, Bureau of Tuberculosis Control, New York City Department of Health, since January 1993. Her new position is in the Clinical Services Unit, Bureau of Tuberculosis Control. She will be responsible for coordinating contact investigation and other public health activities of the city tuberculosis clinics. Her appointment was effective on September 15.

Juanita Elder was incorrectly listed in the previous issue of *TB Notes* as a Program Analyst. Juanita is a Resource Management Specialist.

Tom Frieden, MD, MPH, (DTBE/NYC) is being detailed to the World Health Organization (WHO) in New Delhi, India. The collaborative detail between CDC and WHO begins in October. Dr. Frieden will be assigned to the Southeast Asia Regional Office of WHO. It is estimated that each day more than 1,000 people die from TB in India. Dr. Frieden's primary responsibility will be to help the government of India implement a directly observed therapy program for the country. The World Bank will be providing loans to support this program. Dr. Frieden and his staff have had tremendous success in turning around the TB problem in NYC. Among other things they have increased completion of therapy rates from 40% to 90%. The Bureau of Tuberculosis Control in NYC has become an international TB control model. Dr. Paula Fujiwara (DTBE/NYC) will be acting director of the Bureau.

Reuben Granich, MD, joined DTBE in July as an EIS officer, and is working in the International Activity. He attended Boston University and the University of California at San Diego; he earned a degree in biochemistry at UC San Diego in 1985. He then spent 3 years working at the Salk Institute in La Jolla as a research assistant in developmental neurobiology. Reuben attended Stanford Medical School, earning an MD degree in 1993, and completed an internal medicine residency at California Pacific Medical Center, San Francisco, in 1996. He has worked on projects in Mexico, Ghana, Cameroon, Rwanda, Cuba, and the United States, and speaks French, Spanish, and some German.

Debbie Hocieniec recently joined DTBE as the secretary for the Epidemiology Section in the Surveillance and Epidemiology Branch. She started at CDC on August 5. She worked 1 1/2 years at Dobbins AFB in Marietta, Georgia. She also worked at United States Military Academy at West Point, New York, for 4 1/2 years.

Joyce Jones has left the DTBE Office of the Director, where she was a Program Operations Clerk, to take a position in the Office of Health Communications, Office of the Director, CDC. The position has new challenges and broader responsibilities. Joyce's last day was October 23. We will truly miss her competence and reliability.

Marnell Kretschmer has been selected for the vacant TB public health advisor position in the Kentucky Department for Health Services. Marnell has been assigned to the TB program of the Chicago Department of Public Health since November 1993. She has had varied experiences assisting local staff with program planning, operations, and evaluation with a strong focus on activities related to patient compliance and completion of therapy. In her new position, she will function as the senior public health advisor and assistant to the State TB program manager. She will transfer from Chicago to Frankfort on December 8, 1996.

Shahin Lockman, MD, also joined the International Activity in July as an EIS officer. She received her BA in biochemistry/molecular biology from Northwestern University in Chicago. Shahin spent a year conducting research in enzyme kinetics in Boston, then attended medical school at Northwestern University from 1989 to 1993. She completed an internal medicine residency at Beth Israel Hospital, Boston, in 1996. Shahin is working with the Botswana BOTUSA TB project.

Matt McKenna, MD, MPH, has accepted a position in the National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). Matt worked in NCCDPHP prior to coming to work for DTBE. He returns there after working for almost 3 years in the Surveillance and Epidemiology Branch as a medical epidemiologist. Matt left DTBE at the end of August.

Wanda Ramirez joined DTBE as the secretary for the Surveillance Section of the Surveillance and Epidemiology Branch on August 19. She began working at CDC in May 1995 in the Recruitment Branch of HRMO. Before coming to CDC, Wanda was employed for 18 years by the Department of Defense. She began working for the Defense department right after graduation from high school and has worked for the Army, the Navy, and the Air Force.

Barbara Schable, MPH, has been with the federal government for 22 years and with CDC in Atlanta for the past 13 years. Prior to coming to Atlanta, she worked for 7 years as a clinical microbiologist

for the Indian Health Service in Phoenix, Arizona. She worked as a research microbiologist in the Hospital Infections Program, Nosocomial Pathogens Laboratory Branch, for 10 years, from 1983 to 1993. In December 1992, she completed her MPH degree in epidemiology at Emory University. In early 1993 she left the laboratory and accepted a position as an epidemiologist in the Division of HIV/AIDS Prevention, Surveillance Branch. She worked in that position until coming to DTBE in June as a public health analyst in the Epidemiology Section of SEB. Her current position as coordinator for the National Tuberculosis Genotyping and Surveillance Network gives her the opportunity to use her training in both microbiology and epidemiology.

Yvonne Shore joined the Office of the Director, DTBE, on June 24 as a Resource Analysis Assistant. Yvonne has come full circle in that her CDC career started in the Division of TB Control. Most recently, she worked with the Resource Analysis Unit in the National Center for HIV, STD, and TB Prevention and brings with her a wealth of experience in resource management. Yvonne has been responsible for processing and tracking all extramural fiscal obligations in the center, and reconciling these financial obligations with projected division budgets at the end of each fiscal year. Yvonne's knowledge and experience will be invaluable to DTBE.

Phil Smith, PhD, a statistician with the DTBE Office of the Director, has left the division after working here for 3 years to accept a position with the Division of HIV/AIDS Prevention. Before coming to DTBE, Phil was the chief of the Data and Statistical Management Section, Division of Diabetes Translation, CDC.

Esther Sumartojo, PhD, MSc, has accepted a position in the Division of HIV/AIDS Prevention. Esther, a research psychologist, has been with DTBE for 71/2 years, having joined DTBE's Research and Evaluation Branch in 1989. Previously she had worked with the Houston Independent School District as director of evaluation. Esther is a nationally recognized expert in behavioral issues in tuberculosis. In addition to teaching us all to say adherence instead of compliance, she is (and will remain) on the Board of Directors of the ATS and the Board of Directors of the ALA, and is the chairman of the Behavioral Sciences Assembly of the ATS. Her last day was September 27.

Zach Taylor, MD, MS, has been selected for the position of chief of the Prevention Effectiveness Unit, Research and Evaluation Branch, DTBE. Zach joined the Research and Evaluation Branch about 3 years ago as a medical epidemiologist. Previous to that he was a medical epidemiologist with the Agency for Toxic Substances and Disease Registry.

Cindy Weinbaum, MD, is one of the new EIS Officers who joined DTBE on July 19. Cindy received her undergraduate degree at Brown University and her MD degree at the University of Pennsylvania. Prior to obtaining her medical degree, she was an Urban Fellow in New York City and worked in the office of the vice president for medical operations of the Health and Hospitals Corporation. After that she worked on Rikers Island, New York, coordinating the city jail's HIV counseling/testing program and AIDS infirmary. She recently completed a residency in emergency medicine at Stanford University after which she came to work for CDC in the EIS program. She is assigned to the Surveillance Section, SEB.

Ralph Wilmoth, DTBE's public health advisor assigned to the Iowa Department of Public

Health, has resigned from CDC. Ralph came to work for DTBE and was assigned to Iowa in October 1993. He has made significant contributions to the Iowa TB program in this assignment. He has accepted the position of director of Information Systems with the Iowa Department of Public Health. His resignation was effective on September 13.

In Memoriam

William (Bill) C. Burley died on August 20 at Emory University Hospital following a courageous battle with leukemia. Bill came to work for CDC in December 1970 in the Division of Sexually Transmitted Disease Prevention. He had field assignments in Miami, Chicago, California, and Georgia. From May 1982 to August 1983, he was CDC's Equal Opportunity Manager. Following an assignment in the Division of Quarantine, he joined the staff of DTBE in June 1984. He was a consultant and project officer for state and local TB programs in the District of Columbia, Delaware, Maryland, Pennsylvania, Virginia, and West Virginia. He will always be remembered for his good humor, generous personality, and dedication to the mission of CDC. John Seggerson made the following remarks at Bill's funeral: "Bill Burley was an honorable, independent, self-respected, and principled man. He was justifiably proud of his heritage and of his many accomplishments as a CDC employee...Bill was a leader and a morale booster. His optimism and love of life were infectious. Even on a bad day, you could hear his booming voice with laughter saying 'I'm full of vim, vigor, and vitality.' Bill took the lead for the entire TB division in working with the mid-Atlantic states." John then read from a letter to the Burley family from Dr. Bruce Davidson, Philadelphia's director of TB control and vice president of the National TB Controllers Association: " 'A person can tell if someone is just doing their job or is on a mission. Bill was on a mission. He brought dignity, humor, and educational information every time I met him...I liked to hear him talk about hunting and other things, and it probably made it easier for me to hear his criticism and how we ought to do better...When I took over in 1993 and met Bill, cases were going up for the fourth straight year...TB cases are going down now, virtually every case is rapidly reported, and we are growing an experienced corps of public health experts. Bill may have slept in Lithonia and worked in Atlanta, but a million and a half Philadelphians are in his debt.' We have heard similar tributes from Virginia, Maryland, Delaware, Washington, DC, and from Bill's many other friends and colleagues here in Atlanta and elsewhere in the country. We are very sad today and we will all miss Bill very much, but we can be comforted somewhat by the knowledge that the world is unquestionably much better off because Bill Burley passed this way."

Francis J. Curry, MD, a nationally recognized TB expert, died of natural causes on Saturday, August 3, 1996, at the age of 85. Dr. Curry earned his medical degree from Stanford Medical School and his master's degree in public health from the University of California at Berkeley. He became chief of the TB Control Division of the San Francisco Department of Public Health in 1956 and served as the San Francisco TB Controller from then until 1970, when he was appointed Director of Public Health for the city. He remained in that position until he retired in 1976. Upon his retirement, he became fully involved with St. Anthony's clinic, serving the most underserved citizens of the city. He worked tirelessly to make the clinic an effective source of care for the poor until 1990. While chief of the TB control program, Dr. Curry was selected to serve on the National TB Advisory Committee. Using

that forum, Dr. Curry advocated for modifying clinic procedures to suit patient needs, fought against the discrimination faced by TB patients, and lobbied for the strengthening of the public health laboratory as a critical tool against TB. “Frank was a pioneer in recognizing special needs of ‘recalcitrant’ patients. He didn't consider them recalcitrant, but people with other problems. He opened chemotherapy storefronts on skid row and the tenderloin district when others were urging that the patients be put in jail and forcefully treated,” noted Dr. David Sencer, former CDC director. In 1971, Dr. Curry wrote that "the first objective for tomorrow's medicine should be one level of health care for all, regardless of race, ethnic origin, social level, economic status, or educational background--and that one level shall be the best. Nothing less is acceptable." He will be missed but his legacy remains with us. As a tribute to his longstanding work in TB control, San Francisco's CDC-sponsored model TB center was officially named "The Francis J. Curry National Tuberculosis Center" on June 29, 1994.

CALENDAR OF EVENTS

November 5-8, 1996
TB Today
Dover, Massachusetts
An intensive training course for PH nurses
Massachusetts DPH, Division of TB Prevention & Control and the American Lung Association
Tel: (617) 983-6970 / Fax: (617) 983-6990

November 6-8, 1996
TB Program Manager’s Course
Newark, New Jersey
Debra Bottinick
NJ Medical School National TB Center
(201) 982-3270

November 6-8, 1996
Nurses V: The Key to TB Control in the 90's
Dallas, Texas
A training course for nurses
Sally Santellanes
Texas Dept. of Health
(800) TEX-LUNG

November 12-14, 1996
TB Intensive
San Francisco, California
Training Coordinator
Francis J. Curry National TB Center
(415) 502-4600

December 2, 1996
TB and the Law
Newark, New Jersey
Debra Bottinick
NJ Medical School National TB Center
(201) 982-3270

December 9, 1996
TB Update II: Directly Observed Therapy: An Overview
Newark, New Jersey
Debra Bottinick
NJ Medical School National TB Center
(201) 982-3270

December 11, 1996
TB Update
San Francisco, California
Training Coordinator
Francis J. Curry National TB Center
(415) 502-4600

January 9-10, 1997
TB Case Management for Nurses
Newark, New Jersey
Debra Bottinick
NJ Medical School National TB Center
(201) 982-3270

February 7, 1997
Mantoux Tuberculin Skin Test Course
Newark, New Jersey
Debra Bottinick
NJ Medical School National TB Center
(201) 982-3270

February 10-14 and April 14-18, 1997
Postgraduate Course on Clinical Management and Control of TB
Denver, Colorado
Catheryne J. Queen
National Jewish Center for Immunology and Respiratory Medicine
(303) 398-1700

February 12-14, 1997
TB Intensive
San Francisco, California
Training Coordinator
Francis J. Curry National TB Center
(415) 502-4600

February 24, 1997
TB Update I - Medical Management of TB
Newark, New Jersey
Debra Bottinick
NJ Medical School National TB Center
(201) 982-3270

February 27-March 2, 1997
2nd Annual Meeting of the IUATLD, North American Region
"The Role of the Public and Private Sectors in Global TB Control"
Chicago, Illinois
Intl. Union Against TB and Lung Disease
Allan Shaw
Tel: (312) 243-2003
Fax: (312) 243-3954

March 13-18, 1997
Advanced Mycobacteriology:
A Hands-on 4 1/2-Day Course for Laboratorians
Boston, Massachusetts
An advanced-level mycobacteriology workshop emphasizing current techniques and methods; for laboratorians working in Level II or III labs. Application deadline is December 2, 1996
Pat Hall, NE Area Resource Office
National Laboratory Training Network
(617) 983-6284

March 18-20, 1997
Case Management & Contact Investigation
Anchorage, Alaska
Training Coordinator
Francis J. Curry National TB Center
(415) 502-4600

March 19-21, 1997
TB Program Manager's Course
Newark, New Jersey
Debra Bottinick
NJ Medical School National TB Center
(201) 982-3270

March 20-23, 1997
Prevention 97: Science, Technology, and Practice
Atlanta, Georgia
Will address the latest advances in the field of preventive medicine
American College of Preventive Med. &
Assoc. of Teachers of Preventive Med.
Tel: (202) 466-2569
Fax: (202) 466-2662

April 11, 1997
Preventing TB in the Workplace
Newark, New Jersey
Debra Bottinick
NJ Medical School National TB Center
(201) 982-3270

April 17-18, 1997
Fourth Northeast TB Controllers Conference
North Falmouth, Massachusetts
Massachusetts DPH, Division of TB Prevention & Control
A conference for TB controllers in Public Health Service regions I, II, and III
Kathy Hursen
Tel: (617) 983-6970
Fax: (617) 983-6990